

REMARKS

It is noted that the claim amendments herein are intended solely to more particularly point out the present invention for the Examiner, and not for distinguishing over the prior art or the statutory requirements directed to patentability.

It is further noted that, notwithstanding any claim amendments made herein, Applicant's intent is to encompass equivalents of all claim elements, even if amended herein or later during prosecution.

Claims 1-22 are all of the claims pending in the present Application. The Examiner has withdrawn claims 23-27 as allegedly addressing a non-elected invention. Applicants have canceled these claims in order to expedite prosecution.

Claims 9-21 are allowed. Applicants gratefully acknowledge the Examiner's indication that claim 3 would be allowable if rewritten in independent format. However, Applicants decline to rewrite this claim at this time since it is believed that these dependent claims are fully allowable once the significance of claim 1 is understood.

Claims 1, 4-7, 22, and 29 stand rejected under 35 USC §102(b) as anticipated by US Patent 5,623,181 to Suehiro et al. Claim 30 stands rejected under 35 USC §102(b) as anticipated by US Patent 3,875,456 to Kano et al. Claim 2 stands rejected under 35 USC §103(a) as unpatentable over Suehiro, further in view of Kano. Claim 8 stands rejected under 35 USC §103(a) as unpatentable over Suehiro, further in view of US Patent 5,281,889 to Fields et al.

These rejections are respectfully traversed in view of the following discussion.

I. THE CLAIMED INVENTION

As described and claimed, for example by claim 1, the present invention is directed to a light-emitting diode including a light-emitting element. A lead assembly supplies electrical power to the light-emitting element. A reflection mirror is provided in an opposing relation to the light-emitting surface of the light-emitting element. A light-transmissible material seals the light-emitting element, a part of the lead assembly, and the reflection mirror. A radiation surface radiates light reflected on said reflection mirror to the outside.

The reflection mirror includes a metal mirror which is obtained by processing a metal

plate to give it a concave shape or which is obtained by mirror-surface-treating the concave surface of the metal mirror formed by the processing of the metal plate. The radiation surface is formed on the light-transmissible material at its surface at the rear of the light-emitting element and a through-hole is formed through said reflection mirror to serve as an air escape path during an assembly of said light-emitting diode.

An advantage of the present invention is that it provides a method of mass production for LEDs, using conventional metal-forming techniques to pre-form the mirror. The metal plate provides a resistance to heat deformation during fabrication of the device as well as during the operation of the device.

The prior art references of record fail to teach or suggest using a metal plate as the starting point for an LED with a reflector or using a mass production technique for pre-forming a thin metal plate as the beginning process in mass production of an LED.

II. THE PRIOR ART REJECTIONS

The Examiner maintains the rejection that US Patent 5,623,181 to Suehiro et al. anticipates the present invention as defined by claims 1, 4-7, and 22, and further extends the rejection to claim 29. The Examiner also adds:

"The Examiner notes the claim limitation "metal mirror is obtained by process ... said metal plate" is drawn to a process of manufacturing which is incidental to the claimed apparatus. It is well established that a claimed apparatus cannot be distinguished over the prior art by a process limitation. Consequently, absent of showing an unobvious difference between the claimed product and the prior art, the subject product-by-process claim limitation is not afforded patentable weight (see MPEP 2113)."

The Examiner seems confused in a very basic way. First, according to the first sentence of MPEP §2173.05(p) a product-by-process claim is indeed proper. Second, contrary to the Examiner's above assertion, MPEP §2113 does not at all establish that a product-by-process claim limitation has no patentable weight.

What this section more accurately states is that: "Once a product appearing to be substantially identical is found and a 35 U.S.C. 102/103 rejection made, the burden shifts to the Applicant to show an unobvious difference" (emphasis by Applicant).

In the present invention as defined by claim 1, there must be found in a product a

reflection mirror that is concave shaped and that is made of a metal plate. The only "process" aspect to the final limitation is that the concave shaped reflection mirror must have "been formed from a metal plate".

However, the process aspect is irrelevant in the rejection currently of record, since Suehiro clearly does not have a metal plate as a reflection mirror, let alone a metal-plate reflection mirror that was initially formed from a metal plate by shaping the metal plate into a concave shape.

Therefore, since Suehiro fails to have a concave-shaped, pre-formed metal plate reflection mirror, the Examiner is clearly incorrect in failing to provide patentable weight to the product-by-process limitation.

However, in order to expedite prosecution, Applicants have clarified the language to the independent claims to better articulate the structural aspects of the defined invention.

Finally, the claim 1 definition includes the limitation that the metal plate have a through hole to serve as an air escape during assembly. Suehiro has no need for such air escape hole.

A non-obvious advantage of using a metal plate is that conventional (and inexpensive) metal-processing techniques can be used to mass-produce the mirror form, using a number of various techniques, including coining, stamping, and bending. As explained, beginning at the first full paragraph on page 5 through the final full paragraph on page 7 of the specification, the metal plating technique represented by Suehiro has a number of problems which are overcome by using a metal plate pre-formed into a concave shape.

This advantage provides the Applicants' needed justification that the present invention differs in a non-obvious way over other LEDs having a reflective mirror formed, for example, by depositing or plating metal to form a concave-shaped reflective mirror.

The Examiner introduces Kano for purpose of teaching a hole in the reflector and Fields for purpose of teaching ceramic. Neither of these two purposes overcome the deficiency that Suehiro does not have a metal plate as a reflector.

Hence, turning to the clear language of the claims, there is no teaching or suggestion in Suehiro of " ... a metal plate, pre-formed into a concave shape, that forms a reflection mirror, said reflection mirror provided in an opposing relation to the light-emitting surface of said light-emitting element... wherein said reflection mirror comprises a metal mirror which is

obtained by processing said metal plate to give it said concave shape ... ", as required by claims 1 and 7.

Relative to the rejection for claim 5, there is no teaching or suggestion in Suehiro of: ... "wherein said reflection mirror comprises a metal mirror which is obtained by combining plurality of metal plate portions to give the assembly a concave shape."

Again, the Examiner cannot simply ignore this limitation, since Suehiro does not have a metal-plate mirror, let alone one formed by combining a plurality of metal portions.

Relative to the rejection for claim 8, there is no teaching or suggestion in Suehiro of: ... "wherein said reflection mirror comprises a mirror which is obtained by processing ceramic to give it a concave shape." The Hansen reference fails to overcome this deficiency in Suehiro.

Relative to the rejection currently of record for claim 2, based on combining Kano with Suehiro, Applicants submit that this combination is improper, since the Examiner points to no configuration in Suehiro that would benefit by using a hole in the reflector through which to run the leads through. The motivation currently on record to combine Kano with Suehiro is merely a statement of possibility, not a suggestion in either Kano or Suehiro.

Relative to the rejection for claim 8, based on combining Fields with Suehiro, Applicants submit that this combination is also improper, since the motivation currently on record is again merely a statement of possibility. Neither Fields nor Suehiro suggests that a ceramic-based reflector is any better than that described in Suehiro. Nor does the Examiner provide a reasonable rationale as to how the resin-based reflectors of Suehiro could be simply replaced by ceramic. The conclusory motivation currently of record is improper under MPEP §2143.01: "*The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination.*" (Emphasis in MPEP)

For the reasons stated above, the claimed invention is fully patentable over the cited references.

Further, the other prior art of record has been reviewed, but it too, even in combination with the Suehiro, Kano, or Fields references, fails to teach or suggest the claimed invention.

III. FORMAL MATTERS AND CONCLUSION

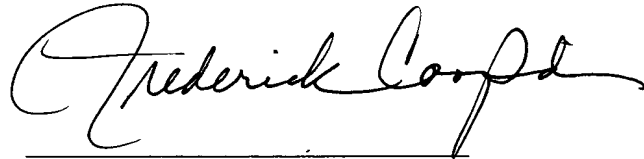
Applicants gratefully acknowledge the Examiner's indication that the priority documents have now been received and entered into the record.

In view of the foregoing, Applicant submits that claims 1-23, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully Submitted,



Frederick E. Cooperrider
Reg. No. 36,769

Date: 10/9/03

McGinn & Gibb, PLLC
8321 Old Courthouse Road, Suite 200
Vienna, Virginia 22182
(703) 761-4100
Customer No. 21254